

Name:

Date:

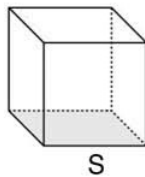
WORKSHEET :



Volume & Surface Area

Surface Area and Volume

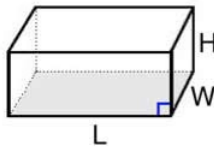
Cube



$$\text{Surface Area} = 6S^2$$

$$\text{Volume} = S^3$$

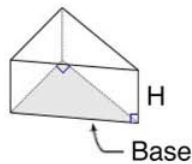
Rectangular Prism



$$\text{Surface Area} = 2LW + 2HW + 2LH$$

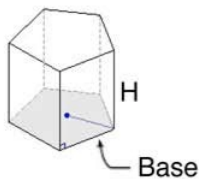
$$\text{Volume} = LWH$$

General Prisms



$$\text{Surface Area} = \text{Sum of the areas of the faces.}$$

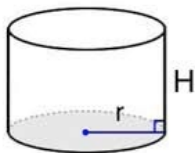
$$\text{Volume} = \text{Area of base times height.}$$





Surface Area and Volume

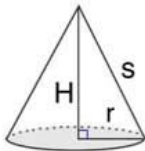
Right Circular Cylinder



$$\text{Surface Area} = (2 \pi r^2) + (\pi 2r H)$$

$$\text{Volume} = \pi r^2 H$$

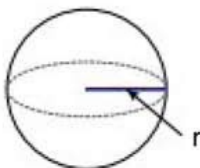
Right Circular Cone



$$\text{Surface Area} = (\pi r s) + (\pi r^2)$$

$$\text{Volume} = \frac{1}{3} \pi r^2 H$$

Sphere



$$\text{Surface Area} = 4 \pi r^2$$

$$\text{Volume} = \frac{4}{3} \pi r^3$$

WORKSHEET :



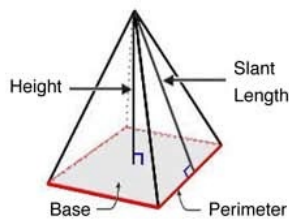
Volume & Surface Area

Surface Area and Volume

Types of Pyramids

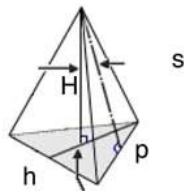
There are many types of Pyramids, and they are named after the shape of their base.

The general equations for Surface Area and Volume of Pyramids when all side faces are the same:



$$\text{Surface Area} = [\text{Base Area}] + \frac{\text{Perimeter}}{2} \times [\text{Slant Length}]$$

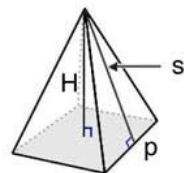
$$\text{Volume} = \frac{1}{3} \times [\text{Base Area}] \times \text{Height}$$



Triangular Pyramid - Triangle Base

$$\text{Surface Area} = \frac{1}{2} p h + \frac{3}{2} p s$$

$$\text{Volume} = \frac{1}{6} p h H$$



Square Pyramid - Square Base

$$\text{Surface Area} = p^2 + 2p s$$

$$\text{Volume} = \frac{1}{3} p^2 H$$

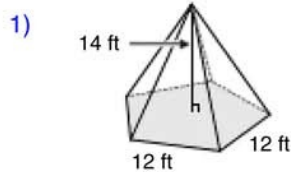
WORKSHEET :



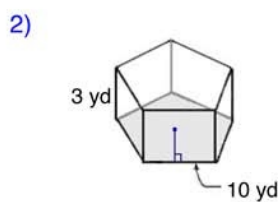
Volume & Surface Area

Volume of Prisms, Pyramids, Cylinders, and Cones

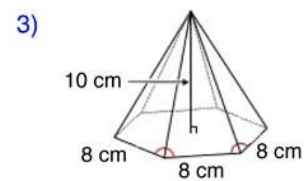
Find the volume of each figure. Round answers to the nearest hundredth, if necessary.



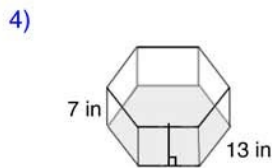
Volume: _____



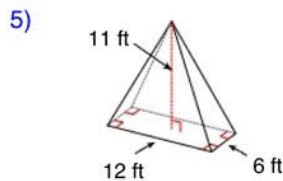
Volume: _____



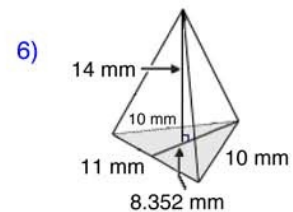
Volume: _____



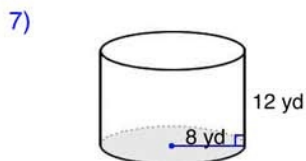
Volume: _____



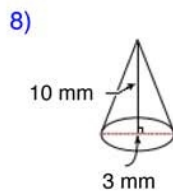
Volume: _____



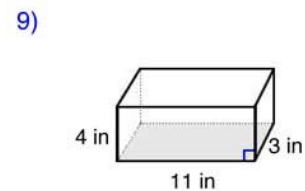
Volume: _____



Volume: _____



Volume: _____



Volume: _____

WORKSHEET :

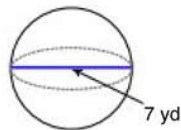


Volume & Surface Area

Surface Area of Spheres

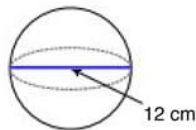
Use 3.1416 for pi. Round answers to the nearest hundredth, if necessary.

1)



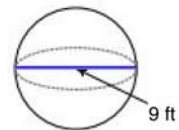
Surface Area: _____
Volume: _____

2)



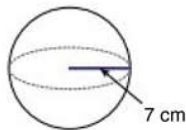
Surface Area: _____
Volume: _____

3)



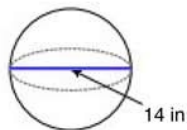
Surface Area: _____
Volume: _____

4)



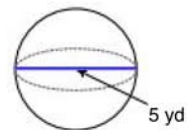
Surface Area: _____
Volume: _____

5)



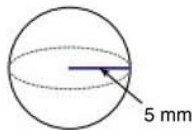
Surface Area: _____
Volume: _____

6)



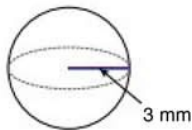
Surface Area: _____
Volume: _____

7)



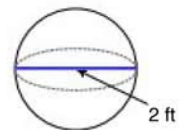
Surface Area: _____
Volume: _____

8)



Surface Area: _____
Volume: _____

9)



Surface Area: _____
Volume: _____

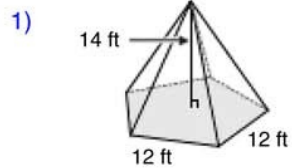
ANSWERS :



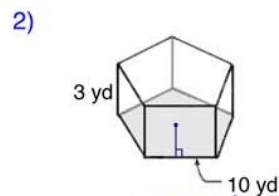
Volume & Surface Area

Volume of Prisms, Pyramids, Cylinders, and Cones

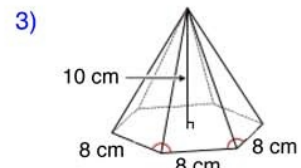
Find the volume of each figure. Round answers to the nearest hundredth, if necessary.



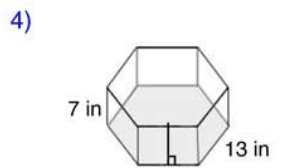
Volume: 1156.16 ft³



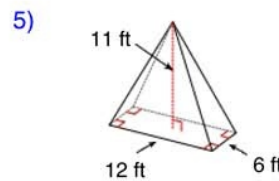
Volume: 516.14 yd³



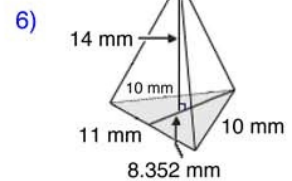
Volume: 554.26 cm³



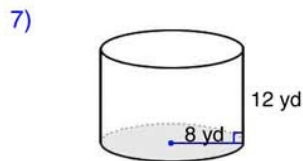
Volume: 3073.52 in³



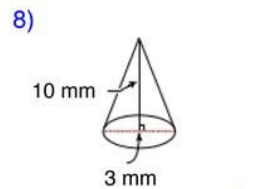
Volume: 264.00 ft³



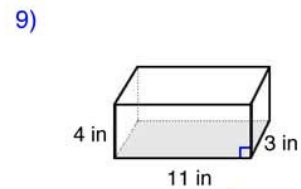
Volume: 214.37 mm³



Volume: 2412.74 yd³



Volume: 23.56 mm³



Volume: 132.00 in³

ANSWERS :

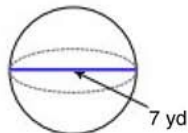


Volume & Surface Area

Surface Area of Spheres

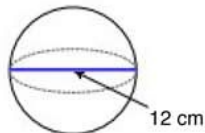
Use 3.1416 for pi. Round answers to the nearest hundredth, if necessary.

1)



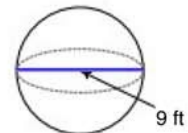
Surface Area: 153.94 yd²
Volume: 179.59 yd³

2)



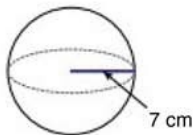
Surface Area: 452.39 cm²
Volume: 904.78 cm³

3)



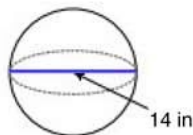
Surface Area: 254.47 ft²
Volume: 381.70 ft³

4)



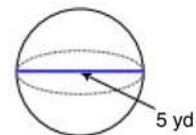
Surface Area: 615.75 cm²
Volume: 1436.76 cm³

5)



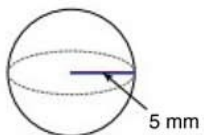
Surface Area: 615.75 in²
Volume: 1436.76 in³

6)



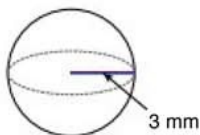
Surface Area: 78.54 yd²
Volume: 65.45 yd³

7)



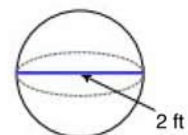
Surface Area: 314.16 mm²
Volume: 523.60 mm³

8)



Surface Area: 113.10 mm²
Volume: 113.10 mm³

9)



Surface Area: 12.57 ft²
Volume: 4.19 ft³

KEY CONCEPTS:

Students often overlook the 3 dimesion shapes. These extra volume and surface area formulas should be memorized although surface area of cones and prisms generally do not appear on the exam. There are a couple simplifications that can help to memorize the formulas.

Volume Formula Tips:

1. The volume of any cylinders, prisms etc. is the base times the height (where all the base areas differ depending on shape).

e.g. Volume Triangular Prism = Area Triangle $\times$ Height

2. The volume of any cone, pyramid etc. with the same base and height as 1. above is 1/3 the volume of 1. above.

e.g. Volume Triangular Pyramid = $\frac{1}{3} \times$ Area Triangle $\times$ Height

3. The volume of a shpere is 2/3 the volume of a cylinder with the same height, 2r.

e.g. The volume of a cylinder with height $d = 2r = \pi r^2 \times 2r = 2\pi r^2$. The sphere that fits inside it is 2/3 that or $\frac{2}{3} \times 2\pi r^3 = \frac{4}{3} \pi r^3$